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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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June 26, 2007

Mr. Briant L. Charboneau
Richland Operations Office
United States Department of Energy
P.O. Box 550, MSIN: A6-33
Richland, Washington 99354

Re: Department of Ecology Review Comments on Sampling and Analysis Plan for Supplemental Remedial Investigation Activities at Model Group 5, Large Ponds, Waste Sites; DOE/RL-2006-57, Draft A 0072351

Dear Mr. Charboneau:

Enclosed are the Department of Ecology's review comments on the referenced document. We have separately reviewed the associated Waste Control Plan and have no comments at this time.

If there are any questions, contact me at 509-372-7921.

Sincerely,

John B. Price
Environmental Restoration Project Manager
Nuclear Waste Program

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Enclosure

cc w/enc:

Craig Cameron, USEPA	Wade Riggsbee, YN
Terry Noland, USDOE	Susan Leckband, HAB
Stuart Harris, CTUIR	Ken Niles, ODOE
Gabriel Bohnee, NPT	Administrative Record: 200-CW-1 OU, 216-B-3-3 Pond
Russell Jim, YN	Environmental Portal

REVIEW COMMENT RECORD (RCR)

1. Date 7-15-03	2. Review No.
3. Project No. N/A	4. Page 1 of 11

5. Document Number(s)/Title(s)	Project Manager Name	Reviewer Name		
Sampling and Analysis Plan for Supplemental Remedial Investigation Activities at Model Group 5, Large Ponds, Waste Sites; DOE/RL-2006-57, DRAFT A				

	10. Agreement with indicated comment disposition(s)	
Organization Manager (Optional)	Reviewer/Point of Contract	Reviewer/Point of Contact
	Date	Date
	Author/Originator	Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1.	1.3 Scope: Washington Administrative Code (WAC) 173-340-740(7)(d)(i)(A) requires a comparison of the soil concentration with the 95% Upper Confidence Limit (UCL). This document presents maximum values for contaminants in shallow and deep zones, rather than 95% UCL values. Maximum values are often not conservative because they can be lower than the mean value for the population, especially when the number of samples is low (OSWER 9285.6-10). Therefore, the data collection proposed by the Sampling and Analysis Plan (SAP) can "enhance remedial decision making" when the preferred alternative is remove, treat, and dispose (RTD) use of the maximum would be allowed. For any remedy other than RTD, a 95% UCL is required to support the choice of remedy.			
2.	Table 1-1: Change column identified as "FS/PP" (DOE/RL#, DOE/RL#) to "Pending FS/PP" (DOE/RL#, DOE/RL#).			
3.	Table 1-1: Request deletion of column identified as "FS/PP."			
4.	Provide information on how possible lateral spread in the vadose zone through the Ringold lower mud (Unit 8) to the unconfined aquifer south of the main pond was considered.			

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	[DOE/RL-1994, 2000 & PNNL-15479]. The Pacific Northwest National Laboratory document was done in 2005 and shows migration of tritium eastward and at very high levels.			
5.	Page iv, last sentence: Ecology disagrees with statement, 'The characterization planned through this data quality objectives process and provided for in this SAP could, in some instances, satisfy confirmatory sampling requirements ahead of the records of decision.' Delete sentence and any references elsewhere to this concept.			
6.	Page 1-3, Section 1.5: Last few sentences; Statement made about some of the radionuclide contaminants entering the vadose zone. Please modify the text to provide specific information for such events.			
7.	Page 1-4, Section 1.6: Ecology disagrees with the approach presented by the Data Quality Objective (DQO) process (elimination of contaminants prior to a risk assessment in the Remedial Investigation (RI) or Feasibility Study [FS]). Rewrite text as follow (add underlined text): The DQO process (Appendix A) includes identification of the contaminants of potential concern (COPC) for further Model Group 5 waste site evaluation. The radiological and chemical COPCs for the Model Group 5 waste sites are a subset of the COPCs identified in RI/FS documents (Table 1-1). The DQO generally narrowed the list of COPCs for this characterization to the primary risk drivers identified in the RI/FS *scoping* process. The COPCs for each waste site are summarized in Table 1-2. Contaminants not identified as COPCs will be reported by the analytical laboratories as detected during data acquisition. During the baseline risk assessment, such data will be evaluated against exposure assumptions to calculate baseline risks.			

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8.	Table 1-1, 216-B-3A & 3B Pond: Verify dates: It is thought to be 1980. Identify the FS/PP for B Pond as pending for the 2002-69 document. Please identify name of document 2003-06.			
9.	Table 1-2, 216-B-3 Pond: Add following to COPC list: Iron, nitrate, silver, selenium, zinc, manganese, BiPO4, Lanthanum fluoride, nitric acid, sodium, Hexone, methyl isobutyl ketone, Tributyl phosphate, PCBs, Aluminum, Tritium, U, Americium, Ruthenium, Sr-90, Pu, Tc-99 & delete footnote 'b'. 216-A-25: Add COPC: As, U, Nitrate, Se, Thallium, V, Sr-90, Zr-95, Co-60, Ne-237, Pu-239, Am-241.			
10.	Table 1-2, Footnote a: Ecology disagrees with footnote. Delete. Confirmatory sampling will be required for all cases.			
11.	Table 1-3: WAC 173-340-747(8) requires certain demonstrations for Alternate Fate & Transport Models that have not been met for the Surface Transport Over Multiple Phases (STOMP) model (Note that submittal of a draft demonstration for the 200-UW-1 operable unit is expected in June or July 2007). Therefore this approach is not approved. Delete this table references to Site-specific modeling using STOMP, and delete other references throughout the document.			
12.	Table 1-5: The Hydrogeologic Model for the 200-West Groundwater Aggregate Area WHC-DS-EN-TI-014, Rev 0 can not be used to calculate soil density, etc. Delete from table, and if used, reevaluate data.			
13.	Table 1-5: Where's the footnote for the 216-B-3 [N[e]]?			
14.	Table 1-6: Ecology disagrees with the decision rules. Rewrite text as follows:			

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	1. If the activity of radionuclides (as estimated by the 95% upper confidence limit of the mean~~, or mean, maximum, or detected values~~) in large-area pond vadose-zone soils results in a ~~direct~~ radiological exposure dose rate or total site risk that exceeds the human health direct exposure, groundwater, and/or ecological protection preliminary action levels for applicable ~~rural/residential (unrestricted surface use outside the core zone) and/or industrial (waste management)~~ exposure scenarios, based on the site contaminant distribution model and RESRAD modeling, then an appropriate action will be selected from Table A-2. 2. If the concentrations of nonradiological constituents (as estimated by the 95% upper confidence limit of the mean~~, mean maximum, or detected values~~) in large-area pond vadose-zone soils exceed the preliminary action levels or total site risk action level for human health direct contact, groundwater, and/or ecological protection for applicable ~~rural/residential (unrestricted surface use outside the core zone) and/or industrial (waste management)~~ exposure scenarios, then an appropriate action will be selected from Table A-2.			
15.	Table 1-7, 216-B-3 Pond: Good work. Please add the number of pushes, etc., being done to the table.			
16.	Table 1-7, 216-S-16 & S-17 Ponds: Add note: Data collection will be coordinated with 200-UP-1 Operable Unit to the maximum extent possible.			
17.	Table 2-1: Add Tritium & Ruthenium to COPC list.			
18.	Table 2-1, Footnote c: See previous comments regarding use of STOMP.			
19.	Table 2-1, For Tc-99 & U-238: Provide numerical values for			

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	groundwater protection.			
20.	Page 2-2, Flow chart: The text below the "Sample and Data Management" box is illegible, so modify the document accordingly (e.g., by editing the font or text style).			
21.	Page 2-19, Table 2-2, Mercury: the table lists Methods 7470 and 7471 for mercury analyses. Eliminate the reference to Method 7470. It is for liquid matrices, and this table is only for soil analytical methods.			
22.	Page 3-1, Section 3.1.1: Rewrite text to state the following: All push probes will go to at least 50ft. and the sampling during these pushes will be taken at the following depths: bottom of the backfill, at 15 ft. and at 50ft. The samples will be analyzed for all of the Containments of Concern (COC) on the updated Table 1-2. Also, revise Table 3-1 and Table 1-7 and Table A-16 to reflect above requirements and throughout the document, correct any other such text to reflect these requirements.			
23.	Page 3-3, section 3.1.3: Edit sentence as follows: 'Actual conditions during drilling may warrant changes to standard drilling and casing installation practices after approval is obtained from the Waste Site Remediation Task Lead and lead regulatory agency.'			
24.	Page 3-4, last paragraph: Please modify the document to include or reference or details of "established sampling practices and requirements pertaining to sample collection, collection equipment and sampling handling (this could be done by stating "as described in the Data Generation and Acquisition section of this SAP, and Table 3-1.")			
25.	Page 3-6, section 3.2.3.1: Provide better explanation of what is meant by 'Possible contingency considerations offset the potential			

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	limitations encountered during sampling in the ponds. The Waste Site Remediation Task Lead will evaluate the need to implement contingent actions on a case-by-case basis' and what is the role of Ecology in the process. Please add a reference to Page 12-2 of the Tri-Party Agreement (TPA) Action Plan for documentation of significant changes.			
26.	Table 3-1, page 3-15, A-25-Gable Mt Pond: Edit text for section with '*Samples*' as follows: All push probes will go to at least 50ft. and the sampling during these pushes will be taken at the following depths: bottom of the backfill, at 15 ft. and at 50ft. The samples will be analyzed for all of the COCs on the updated Table 1-2. For Gable Mt Pond: Also institute a 3 Phased approach similar to what is planned for B-Pond, emanating from the borehole. Pushes are to follow protocols listed above. For Gable Mt Pond: In addition to the sample for Cs-137, other samples will be taken. The number of samples will be based on site variability, and will be taken at random or from a randomly-placed grid and analyzed for the COCs on the updated Table 1-2. Based on the 1974 Aquatic studies of Gable Mt. Pond, define earliest and furthest margins of the pond when considering sample locations. Provide information which documents how the geophysical information was evaluated to support the assumption that samples are not considered required or planned at 216-A-25. Table 3-1, page 3-16, B-Pond, Phase 1 section: Delete last sentence and add the following text: Samples will be taken at all direct push locations and analyzed for the contaminants listed on Table 1-2 as revised according to comment # 12. See comment # 26 for sampling depth requirements.			

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	Edit the sentence previous to this to reflect that all pushes follow protocols listed above. Define earliest and furthest margins of the pond when considering sample locations. Same Table location: Specific Location/Area of Concern: Rewrite text as follows: In addition to the sample for Cs-137, other samples will be taken. The number of samples will be based on site variability, and will be taken at random or from a randomly-placed grid and analyzed for the COCs on the updated Table 1-2.			
27.	During the DQO, Ecology specifically identified the need to collect PHYSICAL soil samples at the "overflow" area, and to analyze those samples at an analytical laboratory. Ecology's request was made because of technical comments made by a Yakama Nation representative. The use of geophysical logging, only, is not acceptable to Ecology. Modify the text to specify the number of samples to be collected, and the analyses to be completed for those samples.			
28.	Appendix A, General: Provide data for Phase III activities as identified in Appendix A, Table A-16.			
29.	Table A-1: Revise table and provide tabulated numeric action levels.			
30.	Appendix A, Table A-4: Ecology has not agreed to the use of the STOMP model. Delete reference and use.			
31.	Appendix A, Table A-8: Provide reason for inclusion of table in document.			
32.	Appendix A, Tables A-9 & 10: Delete Footnote a: the time-frame is not valid if it changes, and the DQOs could be impacted (this scenario was not discussed during the DQO).			
33.	Table A-12: Edit Statistic column as follows "95% UCL of the mean."			

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34.	Appendix A, Table A-14: This table does not include all COC/COPCs. See 1.6 text changes and revise Table to reflect such.			
35.	Borehole for 216-U-10 Pond: Drill and extend borehole so it can be a groundwater monitoring/sampling well.			
36.	Page 3-1, section 3.1.1: 2nd paragraph: Add text and perform activity: "Create three-dimensional graphics of low permeability soil layers to predict pathways in the vadose zone [similar to 200-BP-5 activities].			
37.	Page 2-14, paragraph discussing lab errors: Explain how and when Ecology will have opportunity to review error reports.			
38.	Page 2-9: "existing Hanford site protocols," What does this mean; is this Hanford Analytical Quality Assurance Required Document or what? Clarify.			
39.	Page 2-7, section 2.2.1: Clarify what is meant by 'impacts to meeting the DQOs.' Does this mean moving the sample to just next to the chosen spot because you hit a rock or what? Change "decision maker" to "TPA Project Manager" or "designated person."			
40.	General: Rewrite document with a statement of inclusion of the Ecology in any contingency action decisions.			
41.	General: Update document to include information on the stratigraphy of the site. Perform a literature research and provide results of direct push soil sampler integrity tests.			
42.	General: The presumption of Model Group 5 DQO process was to			

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	identify large area, low concentration contamination, mainly associated with pond bottoms and near surface site risk exposure to human and biologic receptors. <u>One of the assumptions is that during the operation of 216-A-25 and 216-B-3 waste sites groundwater was not impacted.</u> A very large sand bar trends from the northwest of Gable Mountain through West Lake and encompass Gable Mountain and B ponds in an abandon southeast trending flood channel. The hydrological impact of the Ringold and Hanford formation is significant. The Elephant Mountain Member forms an eroded the bedrock surface beneath these waste sites and its interflow zone enable it to produce large amounts of groundwater. The erosion occurred during the deposition of the Ringold sediments and contains the unconfined aquifer. The basal, lower, and middle units of the Ringold Formation are present within the waste site area. Whereas the upper Ringold unit is missing in this area. The Hanford formation include bedding forms such as a horizontal beds with fine lamination impede downward migration of water but promotes lateral spreading, creating perched water zones; and forset beds enhance downward migration along the bedding plane. Unsaturated flow through these sediments in the vadose zone is partially controlled by these bedding forms. Provide information which documents how the above described geophysical information was evaluated to support the assumption that groundwater was not impacted by the 216-A-25 and 216-B crib.			
43.	1.0 Introduction: Prepare and include in this document, a basic narrative, and graphic compilation of understanding and interpretation of site conditions (i.e., the conceptual site model) and how it is related to the objectives of the investigation.			
44.	1.1 Background, Page 1-1: Include with bulleted references a short narrative and description of what is contained within these Workplans and also list the Workplan document titles and reference numbers in			

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	a section in A3.0 references.			
45.	1.2 Waste Site Binning: This document reflects the adaptive SAP approach. Rewrite text to clearly identify this SAP as applying this approach AND provide what soft information is being used in the field and how will the field decisions account for spatial autocorrelation of the samples. Same section: Describe how you applied use of a combination of Bayesian analysis with geostatistics to guide adaptive sampling and analysis plan design and implementation.			
46.	3.1 Sampling objectives: Add text to clarify whether it is the intent of using spectral gamma to determine elemental concentrations at MG-5 sites. If so, check and change to text to describe how to verify & validate the results.			
47.	3.1.1 Geophysical logging: Rewrite text to include gross information on subsurface lithology and sand lense, fractures, or other subtle changes in geology, which can affect hydraulic conductivity.			
48.	3.1.2 DP Soil Sampling and Analysis: Rewrite the last sentence; 'Samples maybe collected and analyzed at discretion of Waste Site Task Lead and Field Team Leader and with Ecology concurrence.'			
49.	3.2 Site-Specific Characterization: Table 1-2: Delete footnotes a and b, and N/A & NR notations. Confirmatory sampling is required for all sites. Provide location of rationale for selection of data gathering methods.			
50.	3.2.3.1 Sampling contingencies: Again, Waste Site Remediation Task Lead must notify and have Ecology concurrence when			

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	implementing a case-by case contingent action. Do document search and update to reflect as stated.			
51.	3.1.1, Table 3.2: This table is confusing and not easy to read. Redesign table to include information from previous tables and update/edit all the footnotes as many have been deleted, sample requirements & depths have changed per Ecology comments. Replace footnote for edit it to indicate number of samples is TBD for other than Cs-137. Provide the statistics you use to populate the column of 'Number of Field Quality Control Samples' according to the footnotes provided. Change Sample depths column to state 'at a minimum of 50ft.' Revise Sample location column to reflect changes in Table 3-1. Revise COPCs column to reflect changes in Tables 1-2 and elsewhere.			
52.	Appendix A: Update to include Ecology's comments on inclusion of geostatistical analysis and how this was performed and other text as reflected in the above comments.			